REMARKS

Applicant thanks the Examiner for the telephone conversation on March 24, 2009 and the Examiner-initiated interview on October 17, 2008. In accordance with the Examiner's request on March 24, to clarify the ordering of the claims, previous claims 1-229 have been canceled and substituted with new claims 230-436 to group each independent claim with its corresponding dependent claims. Accordingly, claims 230-436 are pending in the application upon entry of this amendment.

Favorable reconsideration is respectfully requested in view of the claim amendments and following remarks.

I.   Lack of Complete Claim Consideration

Previous independent claims 210-229 (which are renumbered herein) were submitted in response to the previous Office Action. Applicant notes that such claims apparently are not referenced anywhere in the current Office Action. Such claims have neither been rejected nor allowed, nor otherwise discussed or analyzed in any manner. Applicant respectfully requests, therefore, that if the claims are not allowed, any rejections in the next Office Action be deemed non-final insofar as the independent claims apparently have not been examined previously.

II.   Information Disclosure Statements

Applicant filed two Information Disclosure Statements (IDS's) on May 22, 2008 and October 30, 2008 respectively. The Examiner has objected to the IDS's as allegedly failing to comply with 37 CFR 1.98(a)(1). The Examiner lists five requirements for an IDS, but does not identify specifically which requirement is lacking in the IDS's at issue.

Applicant notes that the IDS's were filed using PTO supplied form SB/08a, which on their face appear to meet all the requirements of the regulation. Applicant, therefore, does not understand the basis for the objections. Accordingly, Applicant respectfully requests withdrawal of the objections and substantive consideration of the IDS's, or alternatively a precise explanation of the alleged defects.

III.   *Claim Rejections – 35 U.S.C. § 101*

Previous claims 109-142 [sic --124?], 126-134, 136-145, 146-157, 159-170, 172-176, 178-182, and 185-209 stand reject pursuant to 35 U.S.C. § 101 as allegedly not being directed toward statutory subject matter.

The Examiner may recall that he initiated a telephone interview with Applicant's counsel in the afternoon of Friday, October 17, 2008. The Examiner started the interview by stating that he had determined that the claims were allowable over the prior art of record, subject to relatively minor amendments that the Examiner deemed appropriate in order to recite statutory subject matter under 35 U.S.C. § 101. In particular, the Examiner suggested amending the claims to reflect that the systems and methods were computer-based and the various analyses were performed electronically by a computer processor. The Examiner offered to make the changes to the claims on his own by Examiner amendment. Applicant's counsel agreed to and accepted the Examiner's suggested minor amendments. Applicant notes that the referenced conversation occurred shortly prior to the Federal Circuit's ruling in *In re Bilski*, 545 F.3d 943, 88 U.S.P.Q.2d 1385 (Fed. Cir. 2008), which clarified the standards for determining whether method claims recite statutory subject matter.

The new claims are in accordance with the principles set forth in *Bilski* and thus recite statutory subject matter for at least the following reasons.

A.   *Method Claims*

The Examiner rejected certain previous method claims as not properly reciting statutory subject matter. At the outset, Applicant notes that of the claims listed by the Examiner in the section 101 rejections, only previous claims 187-205 were actually method claims. This portion of the rejection, therefore, could only have been applied to such claims.

In *In re Bilski*, 545 F.3d 943, 88 U.S.P.Q.2d 1385 (Fed. Cir. 2008), the Federal Circuit recently clarified the standards for determining whether method claims recite statutory subject matter. Under *Bilski*, a process (i.e. method) is eligible for patent protection if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. 545 F.3d at 954, 961. Both prongs of

Bilski are satisfied by the method claims in this case.

First, new method claims 230-322 and 416-434 recite specific apparatus components that perform the various steps being recited. Accordingly, the new claims are tied to particular machines or apparatuses, and the rejections should be withdrawn.

Second, *Bilski* requires applying the transformation test in a manner that accounts for data transformations in the information age: "the main aspect of the transformation test that requires clarification here is what sorts of things constitute 'articles' such that their transformation is sufficient to impart patent-eligibility under § 101." *Bilski*, 545 F3d. at 962. In this vein, the Court noted: "The raw materials of many information-age processes . . . are electronic signals and electronically-manipulated data." *Id*. *Bilski*, therefore, recognizes that the transformation of electronic data constitutes a patentable transformation of an "article" under section 101. *See Bilski*, 545 F3d. at 962-63.

The second prong of Bilski is satisfied here because the incoming data stream (the underlying subject matter) is transformed by the various steps associated with deriving the claimed indicators. In the claimed invention, market data is received over a computer network. Such data conventionally, for example, may be produced in printed form, displayed on an electronic monitor (display device), stored in memory, or otherwise be resident in some tangible, viewable, and/or accessible format. The received data is transformed from its original content into a new dataset based on the derived indicators recited in the claims. Like the original data, the transformed data may be printed, displayed, stored, etc. in various tangible, viewable, and/or otherwise accessible formats. The transformed data, however, differs from the original data stream, and the transformed data would not be available in any format but for the system and methods of the claimed invention.

Because of such transformation, method claims 230-322 and 416-434 recite statutory subject matter, and the rejection of the method claims pursuant to 35 U.S.C. § 101 should be withdrawn.

B.   System Claims

The Examiner rejected certain previous system claims as reciting a computer

system comprising step modules. As such, the Examiner has interpreted such claims as "consisting of software per se, and software is not patentable." (Office Action at page 3.) Applicant respectfully disagrees with the Examiner's characterization of the system claims, now claims 323-415 and 436.

The Examiner's characterization of the system claims as "software" is simply incorrect. Indeed, the Examiner's position is contrary to conventional claiming of devices that are operated under the control of a computer, microprocessor, or comparable electronic control device. It is well recognized that an electronic controller "configured to" operate in a particular manner is structurally defined by the configuration. *Collaboration Properties, Inc. v. Tandberg ASA*, 81 U.S.P.Q.2d 1530, 1536 (N.D. Cal. 2006). Thus, a programmed machine is structurally different from a machine without that program. *In re Noll*, 191 U.S.P.Q. 721, 727 (C.C.P.A. 1976). "[P]rogramming creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from the program software." *In re Alappat*, 33 F.3d 1526, 1545, 31 U.S.P.Q.2d 1545 (Fed. Cir. 1994), *overruled on other grounds*, *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008), *citing*, *Noll*, *supra*. A programmed device becomes a "specific electrical circuit with or without electro-mechanical components". *In re Prater*, 162 U.S.P.Q. 541, 549-50 n. 29 (C.C.P.A. 1969).

This case law demonstrates that a system including an electronic control device, such as the claimed processors, when programmed or configured to operate in a specific manner is an apparatus that is structurally distinct. Accordingly, the Examiner has erred in characterizing the system claims as software. To clarify the nature of the claimed processors, the new system claims recite that the processors are "<u>configured for executing logic</u>" in the manners claimed. The system claims, therefore, recite statutory subject matter, and the rejections should be withdrawn.

C.   Program Claim 435

In the current Office Action, the Examiner did not specifically analyze previous program claim 208, renumbered to new claim 435. The Examiner merely grouped the program claim with the method and system claims. Claim 435 recites proper statutory subject matter under applicable standards.

New claim 435 recites a "computer readable medium device storing a program." New claim 435 clearly recites an apparatus. Accordingly, claim 435 recites statutory subject matter, and the rejection should be withdrawn.

IV.   *Claims Rejections – 35 U.S.C. § 103(a)*

In the current Office Action, the claim rejections under 35 U.S.C. § 103(a) are essentially verbatim to those in the previous Office Action (aside from the apparent omission of references to deleted claims). In addition, previous independent claims 210-229 were not analyzed at all; nor were other previous related claim amendments. As such, Applicant can see no basis for asserting additional or amended arguments.

As indicated above, during the telephone interview of October 17, 2008, there was agreement that the claims recited allowable subject matter over the prior art of record, subject to amendments under 35 U.S.C. § 101 to clarify the statutory subject matter. It may be that in view of such agreement, the repetition of the obviousness rejection was an oversight. If not, Applicant respectfully requests specific consideration and response to the arguments asserted in the response to the previous Office Action, and prior art rejections, if any, should be deemed non-final.

Accordingly, for the convenient reference of the Examiner, Applicant's previous arguments essentially are reasserted below with the claim references modified to reflect the renumbering by virtue of the new claim set.

A. Overview of the Inventive Concept

Applicant's invention provides novel systems and methods to aid securities traders in taking advantage of profitable opportunities that might otherwise be missed.

Traders of securities analyze market data for indications that a given security should be bought or sold. As described in the Background section of the Application, market makers seeking to sell a security submit offers or "asks" with prices at which they will sell the security, while market makers seeking to buy a security submit "bids" with prices at which they will buy the security. At any given time, there exists a lowest ask price and a highest bid price, referred to in the art as the "inside ask" and "inside bid" respectively. The range from the inside ask to the inside bid is referred to as the "inside market".

As understood in the art, a "market maker" is an individual or a corporation allowed by the Securities and Exchange Commission (SEC) to register individual securities for trading and makes a market in the issue. As further understood in the art, the term "market maker" includes an "order entry firm", which is an individual or corporation allowed by the SEC to register securities for trading but is not making a market in an issue that they have an order.

The collection and publishing of stock market transactional information is nothing new. It has been done electronically since the invention of the stock ticker tape. Information relied upon by the market makers to set their bids and asks, as termed in the art, include "level 1 information" and "level 2 information". Level 1 information is the conventional ticker tape information, which includes such items, on a symbol by symbol basis, as the last trade price with its associated trade size, current daily trade volume, daily high and low prices, and various other statistics. These items of information typically are published by the major market exchanges and various news services. As used in the art, level 1 information also includes the inside (lowest) ask and the inside (highest) bid. With the exception of the inside bid and inside ask, all of the other level 1 information flow is transactional in nature and reports trades and other information about the security.

The stock markets are auction markets in which stock security traders, through market makers, compete with each other in the buying and selling of stocks. In this vein, in addition to level 1 information, there exists level 2 information, which includes information as to all the bids and all the asks being made by the various market makers. In particular, level 2 information includes each market maker having at least one open (or active) bid or ask, the time the open bid or ask was made, the volume of the open bid or ask, and the price. (See Application at page 1, line 26 to page 2, line 17.)

The Applicant's methods and systems transform certain level 1 and/or **level 2 information** to identify relationships and interactions among the actions of market makers. This is carried out across a plurality of securities. **The inventive subject matter of the present application is directed to systems and related methods for observing the activity of market makers with the specific aim of generating**

indicators of temporary, short-term imbalances in market maker activity for one or more securities.

Knowing if there exists such imbalances in market maker activity for a security may assist a trader in deciding when to buy or sell the security. As used by the Applicant, an imbalance in individual or collective market maker activity represents an upward or downward pressure upon the price of a security that could lead to a price change in a particular security. (See Application at page 11, lines 1-7.) Although security prices cannot be predicted with certainty, an upward imbalance tends to predict that a security price will rise, which would indicate a favorable opportunity to buy the security. In contrast, a downward imbalance tends to predict that a security price will fall, which would indicate a favorable opportunity to sell the security.

The claimed systems and methods allow a trader to keep up with market dynamics in a timely fashion while highlighting buying and selling opportunities before the opportunities pass. The market is constantly in flux, but the claimed methods and systems allow the trader to respond to market dynamics in a timely enough manner to take advantage of market opportunities that, without the claimed methods and systems, would likely be missed.

Prior to the claimed system and methods, the conventional approach to monitoring market maker activity was to collect all of the market maker information for a particular stock and to display the information for that particular stock in a table on the computer screen. In order to see market maker information for a different stock, a different table had to be opened by the user. On an active stock, such as any large Fortune 500 company or similar, there could be upwards of 200 hundred different bids and 200 different asks at any one time. The stream of level 2 information is currently between 6 and 10 times larger than the stream of level 1 information. **Nothing in the prior art teaches how to simultaneously monitor up to all of the market maker activity taking place in up to all of the securities on an exchange, to create indicators of temporary imbalances in market maker activity as to one or more securities, and then to identify previously unknown market maker derived relationships from those indicators.**

As explained in the Background section of the present application, to predict price movement in a security, traders conventionally observe market maker activity using raw level 1 and level 2 data. Prior to the Applicant's invention, traders had to mentally assimilate the raw level 1 and level 2 data to try to predict price movement. This is extraordinarily difficult and is mentally taxing on the trader. Also, even experienced traders are only able to follow the activity of a handful of securities at a time. Without the power of the claimed methods and systems, trying to mentally identify indicators of market opportunities would likely be an impossible task.

The Applicant sets forth specific imbalance indicators relating to market maker activity that are not disclosed or reasonably suggested by the prior art. The analysis techniques may be applied in a timely and opportunistic manner across a large number securities and market makers so that a user can be made aware of imbalances in market maker activity for securities that are not being closely observed. With hundreds of level 1 and level 2 data points that are updated each second for an exchange such as the NASDAQ, the claimed systems and methods allow traders to be more fully aware of the behavior of the market. This knowledge may lead to the placement of more opportune buy and sell orders that could not otherwise be accomplished without the claimed systems and methods.

As shown below, the references relied upon the by Examiner, whether viewed alone or in combination, do not disclose or render obvious the inventive features of the claimed invention. Accordingly, the claim rejections should be withdrawn.

B. General Arguments Applicable To The Claims

Based on the above, all but two of the independent claims recite at least the following features[1]:

> (1) receiving with an electronic receiver a dynamically updated data stream containing level 2 data relating to bids and asks for a plurality of securities, and

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[1] Independent claims 307 and 406 are exceptions insofar as they do not specifically recite the second feature.

(2) analyzing each data item within the data stream with an automated computer processor configured for executing logic to transform the market data to derive an indication of a temporary imbalance in market maker activity for at least one security.

The claims differ in part with respect to the specific nature of the derived imbalance indicators recited in each claim grouping of an independent claim and its related dependent claims. The details of the various imbalance indicators are discussed below. At the outset, however, Anaya and Higgins, whether alone or in combination, do not disclose even the two more general features identified above.

Anaya discloses the creation of a central line handler through which the NASDAQ manages the collection, storage, and publication of its data. Anaya is concerned with monitoring the market for unusual conditions (see, e.g., col. 5, line 66 to col. 6, line 3). The information analyzed in Anaya, however, *is limited to level 1 data and excludes level 2 data*. For this reason, Anaya lacks the first claim feature identified above.

Anaya's entire disclosure is directed to a fault resistant system for combining market data messages from a plurality of data feed lines. The system monitors the data for errors and potential errors, corrects the errors so they can be removed from the data stream, and publishes and stores the corrections. Anaya only makes reference to the display of data on its own internal workstations, and not to systems accessed by the actual data subscribers. There is no disclosure of how any of the data is used or disseminated into the public domain. Anaya merely takes data that is made available from the various market participants and combines the data into a single data stream by sequentially numbering each received message. From the combined data stream, Anaya's system collects the market maker activity for a stock (and only on a stock by stock basis) for display for NASDAQ's internal data analysts and data originators (see Fig 37), not for its data subscribers. As such, **Anaya does not compare collective market maker activity across a plurality of securities, and nor does Anaya combine market maker activity from plural securities.**

Anaya is mainly focused on describing their redundant data server architecture for combining data, checking it for errors, and alerting analysts at NASDAQ and their

data providers of potential errors. Those error alerts are investigated, and either confirmed as errors and corrected, or they are confirmed as not in error. Then the data stream can be relayed to provide a standard display to subscribers, even in the event of a complete system crash.

Anaya does not teach or reasonably suggest the specific indicators of upward or downward imbalances in market maker activity for a security based on dynamic market maker activity, as have been particularly pointed out and distinctly claimed in the application. Nor does Anaya teach or suggest analyzing the inter-related collective and coactive behavior of market makers across plural securities to create timely indicators of market opportunities.

Some terms used by Anaya may seem similarly sounding to terms used by the Applicant, but an analysis of the specific use of such terms reveals the distinctions between the teachings of Anaya and the claimed invention. For instance, Anaya uses the term "analysis of different market events to detect some alert conditions" (Anaya at col. 10, lines 7-8) to describe the searching of the data stream for errors so that market participants may be alerted to mistakes they may have made in entering the data. NASDAQ may then hold the release of the data until such time as the error has been checked by a human assigned that that task. **Anaya, however, nowhere discloses the derivation of specific indicators of imbalances in market maker activity relating to a security.**

The alerts described by Anaya are presented to the internal NASDAQ analysts, who check the source of the alert in order to ensure accurate market information is relayed to NASDAQ data feed subscribers (column 28, line 47 to column 30 line 7). No discussion of relaying these alerts to subscribers is presented. Anaya states: "To detect alert conditions, the market monitoring system 10 analyzes data such as quotations and indices, options/derivative prices, trade prices and quantities, trading halts, and price data on initial public offerings (IPO's)." (Anaya at col. 6, lines 3-7.) As understood in art, such information is only level 1 data. **There is no mention in Anaya of monitoring level 2 data generally; nor specifically to monitoring open bids and open asks of the various market makers.**

Of the alert conditions monitored by the process of Anaya, certain alerts may be specifically tied to inside bids and inside asks, which is level 1 data. This may be why the Examiner has concluded, though erroneously, that Anaya discloses the first claim feature identified above. Even these alerts in Anaya, however, do not invoke the monitoring of level 2 data, and do not provide for furnishing the level 2 data to either the data originators or subscribers.

For example, one such alert is the Locked/Crossed (L/C) market alert. As stated in Anaya: "A locked market occurs when the inside ask and bid quotes for a security are equal. A crossed market occurs when the inside bid quote is greater than the inside ask quote for a security." (Col. 22, lines 9-14, emphasis added.) As stated above, those skilled in the art understand the *inside* bid and *inside* ask quotes to be part of the level 1 information. Thus, even as to the L/C alert, Anaya does not rely on a data stream including the actual level 2 information.

Another alert based on the inside bid or inside ask quote is referred to in Anaya as a Quote/Trade Comparison (QTC) alert. "A trade whose price is unreasonably related to the inside quotes for a traded security generates a QTC alert." (Col. 23, lines 32-33, emphasis added.) Accordingly, similar to the L/C alert, the QTC alert is based on the inside quotes, or level 1 information. Again, Anaya does not rely on level 2 information.

Certain deviations from the inside bid or inside ask quotes may trigger an alert within a class of alerts generally defined in Anaya as Unusual Market Activity (UMA) alerts. Among other situations, a UMA alert may be triggered by rapid movement of quotes during a trading session. "Quote movement may be detected from the inside bid and/or inside ask quotes. The movement also may be detected by a large standard deviation between quotes for one security." This includes "[u]nusual spreads between ask and bid inside quotes for a security." (Col. 27, lines 52-57.) Accordingly, similar to the L/C and QTC alerts, the relevant UMA alerts are based on the inside quotes, or level 1 information. Again, Anaya does not rely on level 2 information.

The Examiner cites broadly to Figs. 4, 6, and 37 as reciting the claim feature of receiving a dynamically updated data stream containing level 1 and level 2 data relating to a plurality of securities. A review of these figures, however, reveals that consistent

with the above, at most only the inside bid and inside ask quotes are indicated, which is level 1 information. More importantly, subscribers have no control over setting or displaying these alerts. The data presented by Anaya in Fig. 37 shows data in the format it is presented to the NASDAQ's internal data stream analysts. **In fact, subscribers to Anaya's systems will never be made aware of any of the alerts Anaya discloses, because they are only generated for internal purposes of ensuring correct data provision.** Fig. 37 represents nothing more than the consolidation of data from the error checking analysis on one screen. The alerts do not aid stock security traders in recognizing favorable buying and selling opportunities because the alerts are never even relayed to the subscribers. Since the data displayed by Anaya is just news and pricing information that may be in error, it follows that the claimed subject matter is not disclosed by Anaya.

Accordingly, a transition to additionally furnishing level 2 information would not be a straight-forward extension of Anaya. Level 2 information is not necessary to detect the alert conditions described in Anaya, and given the vast amount of level 2 data available, the furnishing of level 2 information would likely, and unnecessarily, overburden a system used to implement Anaya's teachings.

For at least these reasons, Anaya does not disclose the claim feature of receiving a dynamically updated data stream containing *level 2* data relating to a plurality of securities. In addition, based on the Examiner's statement that Anaya does not disclose previously claimed indications of "price pressure", the Examiner would also seem to recognize that Anaya does not disclose the second feature identified above -- deriving an indication of a temporary imbalance in market maker activity for a security. For this second feature, the Examiner may attempt to rely on the disclosure of Higgins as done in the Office Action. A combination of Anaya and Higgins, however, does not result in or disclose the claimed invention.

Higgins broadly relates to distributing, processing, and displaying financial market data and news. Higgins provides improvements on the state of the display of level 1 market data on a computer monitor around the time the application was filed in the late 1980s to early 1990s. **Higgins' invention was designed to provide up-to-date stock quotes for use by thousands of brokers working for a specific brokerage**

company. Higgins does not go anywhere beyond the provision of such raw level 1 market data.

Similar to Anaya, therefore, Higgins is concerned with only level 1 information. Higgins provides for furnishing "[s]tock trade executions, quotations and other <u>ticker plant information</u>". (Col. 1, lines 37-39, emphasis added.) The "ticker plant information" refers to the well-known "stock ticker" containing stock prices and quotations provided by the major stock exchanges and news services. (See, e.g., col. 2, lines 42-57 and col. 3, line 66 to col. 4, line 20.) Those skilled in the art would understand such information to comprise only level 1 information. Higgins makes no reference to monitoring level 2 data generally, nor specifically to monitoring open bids and open asks of the various market makers for the specific purpose of deriving indicators of temporary imbalances in market maker activity for security.

Indeed, **Higgins in fact does not disclose analyzing the level 2 data stream and deriving indicators of temporary imbalances in market maker activity for a security.** Although Higgins refers to "derivative data", the derivative data of Higgins is not comparable to the claimed subject matter. Higgins states: "Various derivative tasks, such as price security limit alerts and customized, selective ticker displays, are user programmable and are actuated by the work station data base." (Col. 1, lines 51-54.) Thus, a user may customize the manner by which the level 1 information is displayed or provided. This user customization is not comparable to the automatic manipulation of the data stream provided by the claimed invention. Additionally, there is no indication in Higgins that any of the derivative tasks analyze data to derive an indicator of temporary imbalances in market maker activity for a security. None of the derivative tasks in Higgins can be understood as bearing on such imbalances.

The Examiner may consider a "price security limit", referenced in Higgins, as an indicator of temporary imbalances in market maker activity for a security. Such a conclusion would not be correct. As described in Higgins, a price limit is simply a user-established price at which an investor may buy or sell a stock: "Upside and downside limits are often used by brokers and investors as buy or sell conditions and are of interest both to the broker and to his customers owning those securities." (Col. 5, lines. 11-15; see also col. 9, lines 3-16.) Those skilled in the art would understand that such

price limits are fairly arbitrary and by themselves *not* indicative of any temporary imbalances in market maker activity.

For example, suppose a broker sets a price limit to buy or sell a stock at ten dollars. If the stock price falls to ten dollars from a higher price, the stock may be in a downward trend and poised to fall further. Alternatively, the stock price may be at a "bounce back" point and poised to rise. Similarly, if the stock rises to the limit price from a lower price, the stock may be in an upward trend and poised to go higher, or alternatively at a turnaround point and poised to turn lower. Regardless, the limit price in isolation is not indicative of which imbalance in price trending, if any, is present. Limit prices also may be used to lock in profits or prevent losses beyond a certain amount. An investor, for personal financial reasons, may be satisfied with a particular profit or gain, or wish to avoid a large loss. For example, if the investor buys a stock at ten dollars, the investor may set an automatic sell price of eight dollars on the downside and twelve dollars on the upside. In this manner, an investor will lock in a twenty-percent profit and avoid a greater than twenty-percent loss. As in the previous example, the limit prices offer no indication as to the presence of any imbalances in market maker activity. The price limits merely represent fairly arbitrary decisions by the broker or investor. In a general sense, one skilled in the art would understand that upside and downside limit prices, set by brokers and investors for a variety of reasons, bear no relation to temporary imbalances resulting from the bid/ask dynamics of market maker activity for a security.

Contrast the limit prices of Higgins with the derived indicators in the claimed invention. For example, independent claim 230 recites that the derived indicator includes "summing the volume of all active market makers' bids" associated with predetermined securities and "summing the volume of all active market makers' asks" associated with the predetermined securities. Claim 231 recites that the total active bid and ask volumes may be converted to relative bid and ask volumes. If the active bid volume substantially exceeds the active ask volume, this demonstrates a temporary increased demand for the stock. Although future stock price movements can never be predicted with absolute certainty, a higher stock demand is indicative of an upward imbalance in market maker activity. On the other hand, when the active ask volume

substantially exceeds the active bid volume, the demand for the stock is temporarily decreased, which indicates a downward imbalance in market maker activity. When the active bid and active ask volumes are comparable, the stock price would tend to be stable. (See, e.g., Application at page 21, line 13 to page 22, line 14.)

The derived indicator, therefore, provides an actual and direct indication of a temporary imbalance in market maker activity. (A similar analysis may be applied to the derived indicators recited in the other claims.) **The limit prices described in Higgins, in contrast, bear no relation to imbalances in market maker activity that could lead to price fluctuations.**

The Examiner relies on the following passages of Higgins in rejecting the previous version of the claims: col. 1, lines 51-54; col. 5, lines 6-36; col. 6, line 7; col. 8, line 64; and col. 9, line 7. The cited passages from columns 1, 5 (lines 6-15), 8, and 9 merely describe the conventional use of price limits analyzed above. As demonstrated, such price limits do not indicate any imbalances in market maker activity, but simply are based upon whatever investment strategy a broker or investor may select. (See, e.g., col. 9, lines 3-6: "It will be readily apparent that a price may be tested against upper and/or lower bounds as desired for the investment strategy of the user, or the customers of the user.") The passages at col. 5, lines 16-36 and col. 6, line 7 merely provide that level 1 information may be displayed and updated. **There is no disclosure or suggestion in these passages of deriving an indicator of a temporary imbalance in market maker activity.**

For at least these reasons, like Anaya, Higgins does not disclose or suggest the claimed features of receiving the claimed financial market data relating to a plurality of securities, nor deriving indicators of temporary imbalances in market maker activity for a security. Because neither Anaya nor Higgins discloses either of these features, a combination of the references certainly does not result in, disclose, or suggest the claimed invention.

C. Arguments As To Specific Claim Groups

The following arguments are directed to more specific features of the various claims. The above section focused on the general absence in the references of the

analysis of level 2 data, and the general absence of deriving indicators of temporary imbalances in market maker activity. The analysis to follow focuses on the absence of a disclosure of the specific claimed imbalance indicators, and other features of processing the market data, as recited in the various claims.

As is apparent from the claims, there are method claims and system claims reciting comparable features, and therefore method and system claims are grouped together to efficiently describe the claimed subject matter. Applicant notes that the Examiner's rejections are essentially the same for the method claims and comparable system claims.

1. Method Claims 230-243
System Claims 323-336

Independent claims 230 and 323 recite that a dynamically updated data stream containing level 2 data is received, analyzed, and transformed to derive an indicator of a temporary imbalance in market maker activity for a security. The transformation of the data specifically includes summing the volume of each active bid and active ask associated with each selected security. The result is the total number of shares that are bid for each security and the total number of shares that are offered for each security, or "the actual volume of bids and asks". (See Application at page 21, lines 13-21 and graphically illustrated in figure 4A under column 96.) Dependent claims 231 and 324 recite that the summed values are converted into relative totals, or percentage of total bid and ask volume that is on the bid side and percentage of total bid and ask volume that is on the ask side.

These results are useful to a trader as an indication of upward or downward imbalance in market maker activity. As explained at page 21, line 22 to page 22, line 10, if there is more bid volume in the aggregate than ask volume in the aggregate, then there may be increased demand for the security. Greater demand typically is indicative of upward imbalance, so the price may rise. The opposite may indicate low demand and that the price may fall. Bid and ask volumes that are close to each other may indicate price stability.

The Examiner states that Higgins discloses the summing of bid and ask volume, citing the passages identified above in Section II. As shown above, however, there is

no disclosure even generally of deriving indicators of temporary imbalances in market maker activity for a security. Accordingly, there also is no specific disclosure of doing so by summing the active bids and active asks.

Because Higgins does not disclose the claimed features, even if one combined Anaya and Higgins, the subject matter of claims 230 and 323, and the related dependent claims, would not result. These claims, therefore, recite patentable subject matter.

2. Method Claims 244-260
System Claims 337-353

Independent claims 244 and 337 recite that a dynamically updated data stream containing level 2 data is received, analyzed, and transformed to derive a useful indicator of a temporary imbalance in market maker activity for a security. The transformation of the data specifically includes determining whether a bid placed by any of the market makers has a value higher than, the same as, or lower than the previous bid placed by the same market maker. The transformation of the data also includes determining whether an ask placed by any of the market makers has a value higher than, the same as, or lower than the previous ask placed by the same market maker. Essentially, the claimed indicators relate to a change in the bid or ask behavior of a given market maker. This "change" monitoring is described in the application at page 19, lines 8-28 and is graphically illustrated in figure 3 under the change ("Chng") column for market maker lists 84a and 84b, where graphical indicators (plus and minus signs) are used to visually portray the indicators.

The dependent claims build on the "change" indicator recited in the base claims. For example, claims 245-246 and 338-339 recite the deriving of a "buy pressure" and "sell pressure." (See Application at page 22, line 15 to page 23, line 11 and graphically illustrated in figure 4A, column 92.) The buy pressure is the number of market makers that have increased their bid price reduced by the number of market makers that have decreased their bid price. Similarly, sell pressure is the number of market makers that have decreased their ask price reduced by the number of market makers that have increased their ask price. Claims 247 and 340 continue to build on the concept of the respective base claims by deriving "pressurized bid volume" and "pressurized ask

volume." (See Application at page 23, line 12 to page 24, line 16 and graphically illustrated in figure 4A, column 98.) These values combine the buy pressures and the sell pressures with the associated volumes. Thus, the trader may be made aware of large numbers of shares that market makers are collectively trying to acquire or sell, which is indicative of upward or downward imbalances in market maker activity respectively.

Again, the Examiner states that Higgins discloses the tracking of the changes in the bids and asks of the market makers, citing the passages identified above in Section II. As shown above, however, Higgins does not track market maker activity, and, therefore, there is no disclosure even generally of deriving an indicator of a temporary imbalance in market maker activity for a security. Accordingly, there also is no specific disclosure of doing so by tracking changes in the bid and ask behavior of the market makers, as recited in independent claims 244 and 337. For the same reasons, there also is no disclosure or suggestion of deriving the more specific "bid/ask pressure" and "pressurized bid/ask volume" indicators developed in the dependent claims.

Because Higgins does not disclose these claimed features, even if one combined Anaya and Higgins, the subject matter of claims 244 and 337, and the related dependent claims, would not result. These claims, therefore, recite patentable subject matter.

3. **Method Claims 261-270**
   System Claims 354-363

Independent claims 261 and 354 recite that a dynamically updated data stream containing level 2 data is received and transformed to derive a useful indicator of a temporary imbalance in market maker activity for a security. The transformation of the data specifically includes that, for a selected market maker, the securities for which the market maker has active bids and active asks are identified with an indication of the market maker's bid and ask volumes for those securities. A high volume of bids relative to the ask volume is indicative of increased stock demand, and therefore upward imbalance in the market maker activity, and vice versa. This "market maker's book" feature is described in the application at page 26, line 12 to page 27, line 6 and is graphically illustrated in figure 4B under column 100.

Again, the Examiner states that Higgins discloses the tracking of such behavior of the market makers, citing the passages identified above in Section II. As shown above, Higgins does not track market maker activity, and, therefore, there is no disclosure even generally of deriving an indicator of a temporary imbalance in market maker activity for a security. Accordingly, there also is no specific disclosure of doing so by tracking a market maker's book trends.

Because Higgins does not disclose the claimed features, even if one combined Anaya and Higgins, the subject matter of claims 261 and 354, and the related dependent claims, would not result. These claims, therefore, recite patentable subject matter.

4. Method Claims 271-281
System Claims 364-374

Independent claims 271 and 364 recite that a dynamically updated data stream containing level 2 data is received and transformed to derive a useful indicator of a temporary imbalance in market maker activity for a security. The transformation of the data specifically includes determining the combined bid volume and combined ask volume for each market maker for each selected security. This "market stocks" determination is described in the application at page 27, line 17 to page 29, line 2 and is graphically illustrated in figure 4C under column 108. This information may be useful as an indicator of whether a particular market maker is attempting to purchase or sell large amounts of a particular security, which may be a predictor of price movement.

Again, the Examiner states that Higgins discloses the tracking of combined bid volume and combined ask volume of market makers for selected securities, citing the passages identified above in Section II. As shown above, however, Higgins does not track market maker activity, and, therefore, there is no disclosure even generally of deriving an indicator of a temporary imbalance in market maker activity for a security. Accordingly, there also is no specific disclosure of doing so with a "market stocks" determination.

Because Higgins does not disclose the claimed features, even if one combined Anaya and Higgins, the subject matter of claims 271 and 364, and the related

dependent claims, would not result. These claims, therefore, recite patentable subject matter.

     5.   Method Claims 282-293
             System Claims 375-386

       Independent claims 282 and 375 recite that a dynamically updated data stream containing level 2 data is received and transformed to derive a useful indicator of a temporary imbalance in market maker activity for a security. The transformation of the data specifically includes for each market maker, summing the bid volume and ask volume across predetermined securities. Similar to other imbalance indicators, this "market player's" determination is indicative of the market maker's demand (or lack thereof) for the predetermined securities, and therefore imbalances in the market maker activity. This "market player's" determination is described in the application at page 29, line 3 to page 30, line 2 and is graphically illustrated in figure 4D under column 112.

       Dependent claims build on the "market player's" determination of the base claims. For example, claims 284 and 377 recite deriving a novel and unobvious parameter referred to by the Applicant as "market maker buy pressure" and "market maker sell pressure." These parameters use the concept of "buy pressure" and "sell pressure" described above and apply the price direction of the bids and asks to the book of the market maker. The market maker buy pressure and market maker sell pressure, and/or the volumetric information from the base claims, can alert a user to how a particular market maker is behaving, which might be indicative of how the market maker believes the market as whole is directed.

       Again, the Examiner states that Higgins discloses the tracking of the overall bid and ask behavior of market makers, citing the passages identified above in Section II. As shown above, however, Higgins does not track market maker activity, and, therefore, there is no disclosure even generally of deriving an indicator of a temporary imbalance in market maker activity for a security. Accordingly, there also is no specific disclosure of doing so with a "market player's" determination. Furthermore, there is no specific disclosure of doing so based on deriving a "market maker buy/sell pressure", as recited in certain dependent claims.

Because Higgins does not disclose the claimed features, even if one combined Anaya and Higgins, the subject matter of claims 282 and 375, and the related dependent claims, would not result. These claims, therefore, recite patentable subject matter.

6. Method Claims 294-306
System Claims 387-399

Independent claims 294 and 387 recite that a dynamically updated data stream containing both level 1 and level 2 data is received and transformed to derive a useful indicator of a temporary imbalance in market maker activity for a security. The transformation of the data specifically includes determining, on a security by security basis and a market maker by market maker basis, a "bid persistence indicator" and an "ask persistence indicator". These indicators suggest how aggressively a market maker is attempting to buy or sell the corresponding security. The "bid persistence indicator" and "ask persistence indicator" are described in the application at page 30, line 3 to page 33, line 26 and are graphically illustrated in figure 4E under columns 118 and 120 for two different time periods. Dependent claims recite specific ways of calculating the persistence indicators. (See, e.g., claims 67 and 160; 72 and 165.)

Again, the Examiner states that Higgins similarly discloses the tracking of bid and ask persistence indicators. As to these claims, the Examiner cites the following passages of Higgins: col. 4, lines 1-67; col. 7, lines 32-67; col. 9, lines 10-25; col. 10, lines 1-30; and col. 6, lines 24-40. Although extensive, these passages of Higgins may be summarized as disclosing the various ways by which level 1 information is furnished and updated to users. This differs from the bid and ask persistence indicators of the claimed invention

The persistence indicators are measures of the percentage or relative time a market maker has a presence within the inside market. For example, if a bid persistence indicator is high, this means that the market maker's bid is persistently at or above the current level 1 inside bid. In other words, the market maker is bidding aggressively by bidding at or above the level 1 inside bid, thereby indicating increased demand (upward imbalance) for a security. Conversely, if an ask persistence indicator is high, this means that the market maker's ask is persistently at or below the current

level 1 inside ask. In other words, the market maker is selling aggressively by offering the security at an ask price at or below the level 1 inside ask, thereby indicating decreased demand (downward imbalance) for a security.

As shown above in Section II, Higgins is concerned with level 1 information, and not level 2 information in general. Higgins does not track market maker activity, and, therefore, for this reason alone, Higgins does not disclose or suggest the claimed invention. More specifically, although the process of Higgins may furnish the level 1 inside bid and inside ask quotes, there is no disclosure or suggestion in Higgins of using level 2 active asks and active bids *at all,* nor additionally to use the level 2 information to derive persistence indicators for a market maker as claimed.

Because Higgins does not disclose the claimed features, even if one combined Anaya and Higgins, the subject matter of claims 294 and 387, and the related dependent claims, would not result. These claims, therefore, recite patentable subject matter.

7. *Method Claims 307-312*
System Claims 400-405

Independent claims 307 and 400 recite an inventive data filtering technique to increase the predictive accuracy of imbalance indicators. In particular, bids and asks that deviate from the last trade by a threshold percentage are discarded from the data stream. Additional filtering features are recited by various dependent claims. For example, claims 309 and 402 recite that the filtering of the base claims is conducted for plural threshold percentages. The result of the filtering is that outlier bids and asks are removed to concentrate on activity that most closely relates to the inside market. Therefore, a useful result is produced as the data that survives the filter has intrinsic value as a refined data stream. This level 2 data filtering technique is described at page 15, line 17 to page 16, line 23.

These claims differ from the other claim groupings insofar as they do not specifically recite deriving an indicator of a temporary imbalance in market maker activity. The Examiner states that the following passages of Anaya disclose the claimed filtering of level 2 data: col. 4, lines 37-42; col. 5, line 64 to col. 6, line 15; col. 6, lines 39-42; col. 21, lines 55 -56; and Fig. 4.

Referring to the referenced passages of Anaya, col. 4, lines 37-42 is merely a general description of Fig. 1A as showing a market monitoring system that receives a flow of incoming messages containing data on market events. Col. 5, line 64 to col. 6, line 15 describes how incoming data received from market and/or news sources is monitored for errors and used to generate the internal alert conditions. Col. 6, lines 39-42 merely makes reference to the proprietary NASDAQ Quote Data Service (NQDS) for formatting market related messages. Col. 21, lines 55-56 is merely a definition of market makers, and Fig. 4 is simply a depiction of a "common format of the market event objects", i.e., a sample NQDS message. (See Col. 2, lines 40-41; col. 6, lines 39-42.)

This review demonstrates that none of these passages of Anaya deals with filtering data. Indeed, there is no suggestion in Anaya that any data is discarded from the data stream. In addition, as shown above in Section II, the process of Anaya merely provides alerts to internal workstations of the NASDQ data analysts, and the relay of certain alerts to data originators for verification and correction. Anaya does not disclose providing level 2 information to the market makers. Accordingly, Anaya does not disclose level 2 filtering generally, and therefore also does not disclose filtering specifically by discarding bids or asks that deviate from the last trade price by a threshold amount.

Because Anaya does not disclose the claimed features, even if one combined Anaya and Higgins, the subject matter of claims 307 and 400, and the related dependent claims, would not result. These claims, therefore, recite patentable subject matter.

Note also that the filtering techniques set forth in this claim grouping are recited (at least partly) by dependent claims that flow from the various independent claims grouped and discussed in other sections. As such, those dependent claims recite patentable subject matter for the additional reason that the references do not disclose or suggest the claimed level 2 filtering.

8.   Method Claims 313-318
System Claims 406-411

Independent claims 313 and 406 recite that a dynamically updated data stream of market data relating to at least a predetermined set of securities is received. For each security from the predetermined set of securities, there is derived a "set of indicators" indicative of a temporary imbalance in market maker activity for the security. The claims further recite, for a user selected parameter, dynamically sorting a displayed order of the set of indicators. Therefore, a useful result is produced as the imbalance indicating indicators are displayed in a meaningful order, even as the indicators change based on incoming data from the financial market. This dynamic sorting is described in the application, for example, at page 25, lines 3-23.

Again, the Examiner states that Higgins discloses the deriving of similar statistics, citing the passages identified above in Section II. As shown above, however, **Higgins does not track market maker activity**, and, therefore, there is no disclosure even generally of deriving such an indicator. Accordingly, there also is no specific disclosure of dynamically sorting *a set* of such indicators.

Because Higgins does not disclose the claimed features, even if one combined Anaya and Higgins, the subject matter of claims 313 and 406, and the related dependent claims, would not result. These claims, therefore, recite patentable subject matter.

9. ***Method Claim 319 and System Claim 412***

Independent claims 319 and 412 recite receiving a dynamically updated data stream containing level 2 information relating to at least a predetermined set of securities. For each security from the predetermined set of securities, there is derived a "set of indicators" indicative of a temporary imbalance in market maker activity for the security. Like claims 313 and 406, claims 319 and 412 are directed to deriving multiple indicators. The claims further recite charting a derived indicator over a prescribed time period. This deriving and charting are, in and of themselves, useful to a user to assess conditions for buying or selling a security.

Again, the Examiner states that Higgins discloses the deriving of similar indicators, citing the passages identified above in Section II. As shown above, however, Higgins does not track market maker activity, and, therefore, there is no disclosure even

generally of deriving an indicator indicative of a temporary imbalance in market maker activity for the security. Accordingly, there also is no specific disclosure of charting *a set* of such indicators.

Because Higgins does not disclose the claimed features, even if one combined Anaya and Higgins, the subject matter of claims 319 and 412 would not result. These claims, therefore, recite patentable subject matter.

10. *Method Claims 320-322*
System Claims 413-415

Independent claims 320 and 413 recite that a data stream of level 2 information is received, from which is derived a useful indicator of a temporary imbalance in market maker activity for a security. These claims are directed to assisting the trader in analyzing market depth by grouping the bids and asks respectively by price. For the bids, the number of bids in each group and the volume of those bids are displayed. Similarly, for the asks, the number of asks in each group and the volume of those asks are displayed. This information may give the trader a degree of understanding as to how aggressively market makers are attempting to buy or sell the corresponding security, which may be an indicator of price movement. Exemplary results of the claimed subject matter are illustrated in figure 3 as bar charts 86. The associated description may be found in the application at page 17, line 29 to page 18, line 15.

Again, the Examiner states that Higgins discloses these claimed features, citing the passages identified above in Section II. As shown above, Higgins does not track market maker activity, and, therefore, Higgins does not disclose deriving an indicator of a temporary imbalance in market maker activity for a security. In addition, the Examiner states that Anaya discloses grouping bids and asks respectively by price. As shown above, however, the process of Anaya does not disclose providing or analyzing level 2 data, and therefore there is no disclosure of grouping the level 2 bids and asks.

Because the combination of Higgins and Anaya does not disclose the claimed features, claims 320 and 413, and the related dependent claims, recite patentable subject matter.

11. *Independent Claims 416, 435, and 436,*
And Dependent Claims 417-434

As amended, independent claims 416, 435, and 436 recite receiving of a data stream containing bids and asks for securities traded on at least one common exchange, and deriving an indicator for each of the plurality of securities indicative of a temporary imbalance in market maker activity for a security. These claims, therefore, are directed to Applicant's approach of simultaneously analyzing up to all market maker activity for plural securities. These claims further recite that the derived indicator is a function of inter-related collective and coactive behavior of a plurality of market makers. As a result, the claims generate a useful output. That is, the indicators are indicative of imbalances that a user may use to asses whether to buy or sell a security.

Again, the Examiner states that Higgins discloses the tracking of information relating to a plurality of securities to derive a similar indicator, citing the passages identified above in Section II. As shown above, Higgins does not track market maker activity, and, therefore, there is no disclosure even generally of deriving an indicator indicative of a temporary imbalance in market maker activity for a security. Accordingly, there also is no specific disclosure of doing so as a function of inter-related collective and coactive behavior of a plurality of market makers.

Because Higgins does not disclose the claimed features, even if one combined Anaya and Higgins, the subject matter of claims amended 416, 435, and 436, and the related dependent claims, would not result. These claims, therefore, recite patentable subject matter.

Furthermore, many of the dependent claims in this grouping build upon the concept of generating a useful output in the form of a statistic that is a function of inter-related and coactive behavior of a plurality of market makers. Specifically, many of these dependent claims recite deriving specific indicators of imbalances in market maker activity comparable to those recited in the independent claims of the other groupings. The dependent claims in this grouping, therefore, recite patentable subject matter for the same reasons as set forth in previous sections.

V.   Conclusion

In light of the foregoing, the claims recite statutory subject matter. In addition, numerous claim features are not disclosed or suggested by either or both of Anaya and

Higgins. A combination of Anaya and Higgins, therefore, does not result in, disclose, or suggest the claimed invention. Accordingly, claims 230-436, are not obvious over Anaya in view of Higgins pursuant to 35 U.S.C. § 103(a).

For at least these reasons, it is respectfully submitted that the present application is in condition for allowance and notice to that effect is hereby requested. If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0988, our Order No. CUTLP0102US.

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Respectfully submitted,
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